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| 1. AGENCY USE ONLY (Leave Blank) | 2. REPORT DATE
28 July 1999 | 3. REPORT TYPE AND DATES COVERED
Final Report Electronic Order Form |
|---|---|---|

4. TITLE AND SUBTITLE
Data Collection/Verification: Improved Forms SF 358 & 1111
Electronic Order Form
DDFG T1-P2

5. FUNDING NUMBERS
SPO100-95-D-1002
DO 0004

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10. SPONSORING / MONITORING AGENCY REPORT NUMBER

11. SUPPLEMENTARY NOTES

12a. DISTRIBUTION / AVAILABILITY STATEMENT

Unlimited

12b. DISTRIBUTION CODE

13. ABSTRACT (Maximum 200 words)
The purpose of this project was to write verbal descriptions of body measurements for all needed male and female body dimensions, write in lay terms clear verbal description of body measurement, where to measure the body, and how to take measurements of the body. Also develop video of proper measurement procedures and then develop software to display body measurements, instruct one on how to properly measure the body, and develop software that would record order information and transfer the file output to a database. The final phase of the project was to develop an electronic order form and to develop an EDI interface between the electronic order form and X12 841 order for different ordering activities, then package, install, train and test EDI order transmission techniques at pilot sites and commercialize for industry.

19990809 015

| 14. SUBJECT TERMS | 15. NUMBER OF PAGES
15 + links |
|---|---|
| | 16. PRICE CODE |

| 17. SECURITY CLASSIFICATION OF REPORT
unclassified | 18. SECURITY CLASSIFICATION OF THIS PAGE
unclassified | 19. SECURITY CLASSIFICATION OF ABSTRACT
unclassified | 20. LIMITATION OF ABSTRACT
unclassified |
|---|---|---|---|

NSN 7540-01-280-5500

Standard Form 298 (Rev. 2-89)
Prescribed by ANSI Std. Z39-1
298-102

DTIC QUALITY INSPECTED 4

Electronic Order Form (EOF)

For

Special Measurement Uniforms

Prepared for

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July, 1999

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Executive Summary

This project proposed to develop a method of ensuring that the information needed for processing special measurement orders was complete, as accurate as possible, and did not require further manual input upon receipt by DSCP or the manufacturer. This project built upon the previous experiences of manufacturers and the demo facility at Clemson Apparel Research (CAR) in handling special measurement orders. It proposed to be a part of a seamless, integrated, on-line system for the entire special measurement process from order initiation through the processing of orders for shipping and invoicing.

A garment measuring module in the Gerber Information Systems PDM product inspired the design of the Electronic Order Form (EOF), with graphic, text, and video aids to the user. The World Wide Web was selected as the delivery mechanism because it was state-of-the-art and platform independent and because it would easily provide for wide distribution and instant, transparent updates. The list of body dimensions to be included in EOF was determined by collaboration among industry, education, and government. EOF replaces the DD1348, DD358, and DD1111 forms and enhances the ordering process by:

- Collecting information about the Ordering Officer and the Garment Recipient
- Providing a mechanism for selecting garments and quantities to be ordered from dynamically prepared uniform item lists (based on the service and sex of the Garment Recipient)
- Leading the user through Preparation for Measuring
- Leading the user through the Measurement process with graphic, text, slide show, and video aids to understanding
- Assisting user input through providing pull down menus
- Allowing the user to input comments
- Checking for input errors and/or omissions
- Prompting the user to correct detected errors/omissions
- Providing a summary of all input
- Electronically transmitting output to FTP sites for DSCP and the manufacturer of each item ordered.

EOF is password protected and is accessed through the DSCP ASCOT Electronic Commerce Web page. It is also available to experienced users in a short form, which resembles the Summary Page (with the addition of pull-down menus and hypertext links to the graphic, text, slide show, and video aids, if needed as a reminder of correct measurement procedure). An additional non-Web version called "EOF Lite" was developed for use only by those Recruit Induction Centers where the uniform issue and ordering sites are not co-located.

EOF was tested at Fort Jackson, SC beginning in April 1998 and was made available to all users in January 1999.

Background

As a part of the Defense Logistics Agency's Apparel Research Network, Clemson Apparel Research (CAR) maintains a fully functioning manufacturing plant in which primarily shirts, military and commercial, are produced. This manufacturing facility, with its complement of modern equipment consigned by numerous vendors, acts as a laboratory for the demonstration and testing of contemporary sewn-products manufacturing and management practices. Two projects undertaken by CAR as a contractor for the military have been "quick response" and "special measurement" manufacturing of various military clothing items. Both of these projects require that the time between receipt and shipping of an order be considerably shorter than has previously been customary in the sewn products industry. It was as a result of the closing of the DSCP factory in Philadelphia, and CAR's resulting contract to make shirts for military personnel who could not fit in standard sizes (i.e. special measurement orders), that the need for the current project became evident.

In the past, Special Measurement Forms DD358 and DD1111 were filled out manually by the CIIPs, MCSSs, ROTC units, and JROTC units. The forms themselves provide places for indicating order information, measurements, and comments. Unfortunately, however, the illustrations of where to take measurements are unclear; many of the measurement-takers are untrained; and there is no way to ensure that the information provided will be complete, accurate, or reliable. In the past, there has been a screening process at DSCP to identify forms with incomplete or erroneous manually provided information. Forms being sent directly to the contractor, however, were not being screened, moving the point of error identification even further from the source of the order information.

Duplication of effort at DSCP and the contractor adds to costs. In the past, order information on the Form DD358 or DD1111 was manually posted at DSCP. Photocopies were made and sent to the contractor(s) with the contract for manufacturing the special measurement items being ordered. The contractor had to post the order information manually (copied from the contract and/or forms) and determine the sizes to be assigned or alterations to be made. When information was incomplete or erroneous, a telephone call or FAX to DSCP was necessary. This step was followed by a lengthy and expensive process of attempting to determine the correct information. Sometimes the contractor telephoned the order point directly to attempt to expedite the process. When the correction was made (which could be long after the due date of the contract), the

garments could finally be made, but meanwhile the contractor's production had been interrupted and the contract technically was not completed on time.

Problem

The problems of incomplete and/or erroneous measurements reported on the men's Special Measurement Form 358 and women's Special Measurement Form 1111 were addressed by this project. Specific problem areas included:

- A lack of clarity on the forms in the definition of the measurements needed and how to measure them
- Errors in the completion of the forms due to the lack of expertise of some measurement-takers at the CIIPs and most measurement-takers at high schools with JROTC programs
- The ease of sending in a form with incomplete information.

Objective

The objective of this project was to improve the quality of information provided to the contractor of special measurement garments in order to expedite the assigning of sizes and / or alterations for manufacturing.

This project was designed to produce an electronic reporting device that:

- Clearly defines what data are needed
- Instructs the user in obtaining the data
- Screens data input for likely errors
- Discourages completion of the form without complete input
- Permits immediate electronic input for further processing without additional input.

This project offered the potential for significant savings in the necessity for, and the duplication of, manual efforts (and the inherent human errors thereof) and frustration on the part of contractors. It proposed to speed the process of getting special measurement uniforms in the correct size to the military personnel who needed them. In particular, this project was believed to be essential if those basic training service members who required special measurement uniforms were to receive their uniforms in time for graduation. Successful completion of this project was expected to permit lower handling cost per order through DSCP and at the apparel manufacturer. It was intended to expedite throughput by eliminating the need for manual posting.

Technical Approach

Design Inspiration
A module that was added to the Gerber Information Systems (GIS) PDM product in the spring of 1995 inspired the design of EOF. The module was intended for quality control specification clarification in an on-line specification sheet product. After a conversation with the developer of the module at GIS, it was determined that the module was too embedded in the PDM product to become a stand-alone for military use. The developer, however, agreed to CAR's use of a similar format.

The primary components of the GIS module were:

- A graphic (line drawing) of the garment with an indication of where to take the measurement
- A verbal description of how and where to take the measurement
- A button for access to a video of how and where to take the measurement.

These components were retained in EOF.

Delivery Mechanism
Early in the development of the EOF project, the World Wide Web was selected as the delivery mechanism for the final product. This decision proved to be the correct choice, as the Web became the "state-of-the-art" in electronic delivery methods very shortly after the beginning of the project. The Web provided many advantages, not the least of which was its platform independence. Users can access the Web through an Internet browser from the PC or Macintosh environment with equal success. The choice of the Web also solved the problem of the distribution of EOF to approximately 20,000 order sites. Through the Web, the user comes to EOF where it resides on the CAR server instead of EOF going to the user. In addition, upgrades to EOF in the Web environment are transparent to the user and are instantaneous. The choice of the Web did present programming challenges, however. This was due, in part, to the newness of the technology, as well as to some of the unique characteristics of the structure of the Web.

List of Garments and Body Dimensions
Before any drawings could be created or verbal descriptions written, the list of garments issued to recruits for each service had to be determined. This information was provided by DSCP. Next, the measurements (by name) needed by the manufacturer, in order to have sufficient information to produce a special measurement garment for each item, had to be determined. An investigation of existing manuals/videotapes turned up primarily garment fitting instruction,

not <u>body measuring</u> instruction for military personnel. Because commercial tailored clothing manufacturers who make made-to-measure garments have manuals for their sales personnel, an attempt was made to acquire as many examples as possible, with the constraint of the perceived proprietary nature of the information.

A preliminary comprehensive list of body dimensions and other useful information (such as posture) to be included in the electronic order form was compiled. A chart was prepared comparing the DD358, DD1111, ARN partner Haas Tailoring male and female order forms, and respective items and descriptions of body measurements in the 1988 ANSUR Technical Report TR89/044. This chart provided a starting point for the research partners at the University of Wisconsin-Stout as they began developing verbal descriptions and line drawings of the needed body dimensions and how to measure them. The final measurement list, locations, and definitions were produced by collaboration among Clothing Initial Issue Points, the DSCP pattern department, government contractors, military service representatives, physical anthropologists, and educators. A list of what measurements were needed for each uniform item was also produced by collaboration. The final measurement list was sent to Anthropology Research Project (ARP) for the development of minimum and maximum values expected for each, based on historical anthropometic data. Base graphics were received from UW-Stout and were cropped and scaled to fit the measurement pages. CAR added the illustrations indicating the correct location of each measurement. At the suggestion of the Navy, CAR added simulated bike shorts (male and female) and sports bra (female) to the computer-generated surface of the graphics. Paul Rosso at DSCP provided the list of garments to be included for each service, by article number and military spec description.

Format and Features
Many decisions had to be made relative to the format and features of EOF, so that the necessary database framework could be determined. For the development of the dynamic web page framework, the main concern was assuring portability and efficiency. While there were third party solutions to issues such as user authentication and database creation and maintenance, these were usually platform specific. EOF is not platform specific and conforms to ANSI standard specifications for the software development. As the electronic order form was being developed, it was tested in Unix, Macintosh, and Windows environments and with both Netscape Navigator and Microsoft Internet Explorer browsers.

The primary components of EOF were determined. This included pages for the following: Ordering Officer, Garment Recipient, Garment Selection, Preparation for Measuring, Measurements, Summary, and Transmit Order.

In order to ensure that only authorized users would place actual orders, EOF is password protected by DODAAC. The input on the Ordering Officer page is retained after initial input because it is specific to the DODAAC/password. Changes can be made as needed, but the page does not have to be filled out for each subsequent use after the first. The Garment Recipient page is the starting point of a loop by which the Ordering Officer can place multiple orders without having to log on again. Heavy use is made of pull-down menus to ensure a higher rate of input accuracy. Input of fractions is by highlighting a selection among choices for 0/4 (.00), ¼ (.25), ½ (.50), or ¾ (.75), since all linear measurements are to be to the nearest ¼ inch. All pages following the Garment Recipient page are dynamically produced, dependent upon the service and sex of the Garment Recipient. Only those measurements required for the item(s) ordered are requested (i.e., an order for a shirt does not request a measurement for leg inseam). The physical layout of the standard measurement page went through many revisions, with input primarily from fellow researchers and the services. A Summary page is provided for a final quality check and to allow the user to print a hard copy of all order input. Intelligence built into the EOF engine identifies possible errors and prompts the user to check input errors/omissions before proceeding further. All pages were first formatted in a static state, then the linkages to incorporate dynamic page creation were added.

As development progressed, provision was made for guest logon to the evolving EOF. This allowed interested parties to view and try EOF so that feedback could be provided. Because the DODAAC for guest orders was "guest," all guest orders could be sent to a separate directory for automatic deletion instead of being processed through DSCP. An attempt was made to anticipate all potential user actions, such as using the forward and back keys of the browser (even after the order has been transmitted) and making input mistakes of all kinds. The error checking to determine whether the measurement fit within an expected min/max range required the addition of an accompanying "status" feature that was incorporated as a pull-down menu. Selecting "value out of range" allows the user to override the built-in minimum or maximum if the garment recipient's body dimension is, in fact, outside of the expected range. A "missing value" status was also added. This allows the user to leave the measurement blank and indicate that it is (intentionally) missing. Although preventing missing data was one of the intended features of EOF, the "missing value" status was added for two reasons. If, for whatever reason, the user cannot provide the requested measurement, there should be a way for the user to continue without becoming frustrated in an error message loop. In addition, the "missing value" status allows the user to print all of the measurement pages for a reference manual, without having to input a measurement value on each page.

Initially a qualitative evaluation for the "body builder" figure type was included as user input. Program management recommended that this be accomplished in a quantitative way. Haas Tailoring provided to CAR the body dimension

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relationships generally used in the commercial world to identify the body builder. The requirement for the software to decide whether to display measurements needed for the "body builder" figure type required a change in the planned software code scheme. This change was made as "clean" as possible, but made the code more complex. Following the collection of the key body dimensions, there is an interruption in the flow of the measurement page display code. During this interruption the software determines which set of additional measurement pages to display (with or without body-builder-specific measurements).

A request was made that the BDU be added to EOF, which was originally intended for dress uniform items only. Authorization to add the BDU was received. DSCP provided article numbers and military spec descriptions. Lonnie Turner at Fort Jackson and Jim Hodo at American Apparel provided guidance for determining which body measurements are required for the Special Measurement BDU.

The inclusion of profile questions in EOF (such as posture, shoulder slope), especially how they should be presented, was discussed at great length. It was decided that profile information was needed and that it would appear between the measurement pages and the summary page. Response is by the selection of a radio button.

A summary page was developed. It collects all inputs and presents them in a format that can easily be reviewed by the user and printed, if desired.

A static "welcome" page was added with a built-in time delay before switching to a dynamic registration page. This made it possible for the registration page to be programmed for error checking. Use of a dynamic registration page made it desirable to permit alternative links between EOF web pages. Previously, all links were accomplished by completing a form and clicking on some sort of "submit." In a dynamically produced page, connections can be made via more conventional hypertext links. Such links (the typical blue underlined text links) permit several alternative actions to be taken from a single page, without multiple forms and submit buttons, through the use of included query strings. The benefit to the user of this alternative linking procedure was a simpler web page. The benefits to the developer were associated with more flexible communication methods.

In anticipation of future use of EOF, provision was added for up to 1000 simultaneous users. Because a Recruit Induction Center may have multiple item managers, the provision for multiple users at the same DODAAC was also added. In the event that a user's EOF session were interrupted (due to Internet connection problems, power outages, work interruptions, etc.) it would be most inconvenient to have to reconstruct the inputs prior to the interruption. For this

reason, a "resume" function was added. If, for any reason, a session is interrupted, upon subsequent logon the user is asked whether to resume the previous session or to start a new session. Interrupted sessions are kept for 2.5 days before being automatically deleted.

Significant effort was expended in preventing an order from being resubmitted if a user transmitted an order and then went back to previous pages in the browser and tried to continue. The software was programmed to recognize such actions. The user is informed that the order has already been submitted and is asked whether they want to begin a new order or to exit from EOF.

In order to give manufacturers as much information as possible, a page was added for the user to indicate the "subgarments worn" and any additional comments which they thought would help in producing a better-fitting uniform. In the case of JROTC, for example, it might be necessary to measure over street clothes in the high school library. If the manufacturer is alerted to this situation, then the measurements of the garment produced can be adjusted accordingly.

EOF was developed with a log file of 500 lines. When 500 lines are complete, they are saved as a backup and a new log file begins. Only the administrator has access to the log files.

Output
It was necessary to coordinate extensively with Paul Rosso and Jim Troutman at DSCP to be sure that all information needing to be collected was incorporated in EOF. This was especially true for the Ordering Officer page. Many additions were made before the final list of necessary information was complete. Many fields on the Ordering Officer and Garment Recipient pages were made mandatory. Wording of some fields was modified (such as "recruit graduation date" to "required delivery date"). It was also necessary to determine naming conventions and an EOF output format that would interface with DSCP's legacy system. The filename for the order (requisition) portion of the output is:

Fixed data, dot, DODAAC code, dot, date, dot, serial number

Example: EOF-A0AS9T.W44DUL.19970802.0001

The filename for the measurement data output is:

Requisition number, dot, article number

Example: W44DUL71230003.315

Extensive discussions were held about how EOF data outputs were to be made available to DSCP and manufacturers. It was decided that EOF would build measurement information files for each requisition number and place each at an FTP sight in the appropriate manufacturer's subdirectory. A list of manufacturers by article number is queried to determine where to send each order's information. Measurement data for manufacturers unable to create their own special measurement patterns are sent to a directory for the DSCP pattern department to be processed in the same manner as DD358 and DD1111 measurement data have been processed in the past.

Video and Slide Shows
A video was prepared as a further aid to the user in acquiring measurements properly. Because of the state of computer processing, modem, and file storage technology at the time, and to the file size required for full-motion video computer files, it was decided that slide shows would also be provided. The slide shows (actually a series of still key frames from the video, each displayed for a pre-determined length of time) required significantly smaller file sizes than the video. Bruce Bradtmiller from ARP appeared on the video to show the proper procedures for measuring. Models were sought who would look visually compatible with Dr. Bradtmiller's height and who would meet the military requirements for facial hair (male) and hair length/style (male and female). The video was shot in BetacamSP format. Models wore bike pants (male and female) and sport bra (female) in a color to match the graphics already incorporated in EOF. In addition, the video producer provided still key frames in JPEG format on ZIP disks for use in the slide shows. The slide shows and videos were prepared as QuickTime movies and linked into EOF. Users can download a free QuickTime plug-in both Mac and Windows versions, from:

http://www.Apple.com/quicktime/download/index.html

The downloaded file goes in the "Plug-ins" directory in the Netscape or Explorer directory and allows the slide shows and videos to be played.

Error Checking
Once the basic structure of EOF was established and a fully functioning test version of EOF was loaded on the Web, efforts began to add intelligence in the form of detecting and calling attention to input errors/omissions. The format employed to alert the user to an error/omission was to display again the page on which the error/omission was made, with the addition of a red error message. This procedure was followed for incorrect passwords, missing mandatory fields (ordering officer and garment recipient), missing serial numbers, missing measurement values, measurement values out of the min/max range, measurement fractions input without the use of the fraction selection box, and alpha inputs where numeric inputs were expected.

Password Protection

Before EOF could be used for real orders, DSCP provided to CAR 1) a list of DODAACs and passwords to let the selected customer(s) log on and 2) the addresses to which to send orders at DSCP. The DODAAC/password list is updated daily. DSCP sends the list to a pre-determined FTP site, from which CAR automatically downloads the list. On the initial login to EOF, a password is required. It is matched to the DODAAC using a secure set of data. If the DODAAC and password match, a code is generated for subsequent use of EOF. Any page submitted in that session has the code embedded in the data that are transmitted to EOF. The code is verified before any subsequent data entries are processed. The code is valid only for a single session so it cannot be copied and used subsequently.

Testing

EOF was initially tested for real orders with the Recruit Induction Center at Fort Jackson, SC. Feedback from the ordering site was most valuable in making EOF as complete as possible. In the first week of the test period, CAR was made aware of "Jane Doe" and "John Doe" orders. It was learned that the Special Measurement ordering process was the authorized means for ordering bulk quantities of selected uniform item sizes. Because EOF had provision for ordering only up to 15 units of any item, the Garment Selection page had to be modified to include pull-down menus for hundreds, tens, and ones instead, so that order quantities of up to 999 were permitted.

Short Form

Once a user has become proficient in the use of EOF, including understanding how and where all the measurements are to be acquired, it is tedious to have to view all of the measurement pages with the graphics and verbal descriptions. For this reason, a short form of EOF was developed. For any given DODAAC/password, when the user has transmitted an order FOR A SPECIFIC ITEM at least fifteen times, an additional page is displayed after the Garment Selection page. It asks whether the user's preference is for the short form or the long form. If the short form is selected, a page with the "look" of the Summary page appears. However, the measurement names are hyperlinks to the original measurement pages (with graphics and verbal descriptions), the measurement-input boxes are accompanied by fraction selection pull-downs, and the status boxes are also pull-downs. The tab key can be used to move from box to box. When a measurement is entered, any movement of the cursor by the use of the mouse or the tab key triggers the min/max error check. If there is a detected error, a dialog box prompts the user to make a correction or change the status. When continue is selected, EOF returns to standard mode to complete the order transmission process. A "reset" button is also provided.

EOF Lite

A request was made that a non-Web version of EOF be developed. Although this did not fit into the researchers' initial plans, "EOF Lite," as it was called, was created. A programmer who had previously done work for Bruce Bradtmiller was hired to develop this limited-functionality version of EOF in Microsoft Access. EOF Lite does incorporate the min/max check for each measurement, to provide SOME error checking at the issue facility. By its very nature, however, EOF Lite has all of the problems that the Web EOF solved. The most important of these problems is that it is platform dependent and there is no provision for its being updated or widely distributed. To date, only one Recruit Induction Center is using EOF Lite, and only as a supplement to Web EOF. This is due to the fact that the issue facility and the item managers are not co-located on the base. EOF Lite is used at the issue facility and a print out is sent to the item managers for logging on to the Web.

Results

Employing the tools created in this project, the special measurement ordering process is described in the following scenario.

At the order site, the order process is launched by logging onto the Web. The DSCP Electronic Catalog, ASCOT, provides access to EOF through the URL http://ct.dscp.dla.mil/Ascot. When "Special Measurements" is selected, the first EOF screen appears and welcomes the user to EOF (Welcome.htm). The second screen requests the input DODAAC and password (Registration.htm). The third screen requests input of ordering officer information (OrderingOfficer.htm). The fourth screen requests input of garment recipient information (GarmentRecipient.htm). After the Garment Recipient screen, when the CONTINUE key is struck, the computer customizes the remainder of the session for either male or female screens, with directions specific to the service selected. The list of items available through EOF for the service and sex selected appears next, the Garment Selection page (GarmentRecipient.htm). The user selects the quantity and indicates the serial number portion of the requisition number for each item being ordered. If the user has ordered the item(s) at least fifteen times in the past, then the Eligible for Short Form screen will appear (Eligibility.htm). If the Short Form is selected, the user does not see the graphic and verbal description prompts, unless the hyperlink to the original measurement page is selected (ShortForm.htm).

The user is directed to prepare the body, and some simple tools, for the measuring process (Preparation.htm). The first measurement screen appears (Measurement.htm). The only measurements requested are those required by the specific items being ordered. At the top are the name of the measurement to be captured and the name, service, and sex of the garment recipient. On the upper left is a graphic of a human form (male or female, as appropriate) with the

location of the measurement indicated. On the upper right are: a verbal description of where the measurement is located, the landmarks to be employed, and how to take the measurement. At the end of the text are hyperlinks to a slide show and a video, with file sizes indicated, as further aides to acquiring the measurement correctly.

At the bottom of the screen is a box where the measurement is to be recorded. When the measurement amount is typed into the box, and the CONTINUE button is struck, the computer checks the input for errors. If there are no errors, the next measurement screen will appear. If the input was alpha, when numeric was expected, the software will prompt the user to input a number (MeasurementInputFormat.htm). If the input falls outside of the minimum and maximum values from historical anthropometric data for the same body dimension, the user is prompted to review the method for taking the measurement and to try again (MeasurementOutOfRange.htm). If the second measurement falls within the minimum/maximum of the validation software, then the user is permitted to move on to the next screen. If the value is still out of range, then the user is prompted to change the measurement status to "Value Out of Range." If nothing was input, then the software will prompt the user to fill in the missing data or to select the "Missing Value" status (MeasurementMissingValue.htm). If a fraction was typed in the input box, the software will prompt the user to input only integers in the input box and to check the computer's selection of a fraction from the fraction selection box (MeasurementFraction.htm).

When all measurement screens have been completed, the user is asked to input profile information about the individual (Profile.htm). This is followed by a request for the sub-garments worn during the measurement process and any additional information that might aid the manufacturer in producing a properly fitted garment (Comments.htm). After the input is complete, the full set of measurements is validated. This is accomplished using software, based on historic anthropometric data, to determine whether this particular set of body dimensions could reasonably occur in the same human body of indicated sex. If the measurements meet the validation criteria, then the Summary page appears. If the measurements do not meet the validation criteria, then the screen(s) for the measurement(s) in question reappear with a request to re-measure (the input box is empty, thus not biasing the repetition of the measurement process). The second set of measurements is validated and the user is permitted to move on to the Summary page (Summary.htm).

The Summary page details all previous input. It is provided as a quality check and as a means by which the user can print a hard copy of the order for reference purposes. If "transmit order" is selected, a Confirmation of Order Sent, Additional Order, and Exit screen appears (Confirmation.htm). If there is no further order to be placed, the user may exit and a Thanks screen appears

(ThankYou.htm). If another order is to be placed, selecting "Additional Order" loops back to the Garment Recipient page.

Upon transmission, the order is broken into two parts for each requisition number. Each resulting file is sent to an FTP site, one for DSCP and one for the manufacturer of the item. An 80-column format text file is stored at an FTP site readable by DSCP for contract assignment. DSCP downloads the order information directly into its legacy system. DSCP proceeds in its usual manner to process the order. A text file with the order information and measurements is stored at an FTP site readable by the appropriate contractor for the item. At the manufacturer's site, the order and measurement information can be either downloaded from the FTP site or printed as hard copy.

Conclusion

With the use of EOF, no duplication of effort is necessary. The order information can be read directly into DSCP's computers and the order information, plus body dimensions, can be electronically fed into the front end of the contractor's size sorting and special measurement pattern generation software (as applicable, depending upon the capabilities of the contractor). EOF includes on-board error checking to detect questionable dimensions at the first input of the data. Corrections can be made at the order site before the information goes further into the process of procuring special measurement uniform items.

All military retail activities, as well as government contractors, should readily accept automated special measurement order forms, because of quality, time, and cost benefits directly to themselves and their customers. However, to achieve a full buy-in, input was solicited from each type of facility that deals with special measurement uniforms. High school students were involved in the wording of the texts and the format of the basic graphics. Manufacturers and RICs were involved in determining the list of measurements needed for each uniform item.

EOF is currently accessible to all military clothing order sites through the ASCOT connection. Frequency of use increases each month as word spreads about its availability. Clemson Apparel Research has completely automated its pre-production processes, beginning with automatically downloading EOF measurement information. As a result, the time necessary to download the EOF measurements, determine the patterns and alterations to use, collect the patterns and make the alterations, lay out the pattern pieces in a marker, and process the marker into a cutfile waiting to be cut has been timed to take as little as one minute and fifteen seconds.

Key to Acronyms

ANSI	American National Standards Institute
ANSUR	Anthropometric Survey
ARP	Anthropology Research Project (a research partner)
ASCOT	Automated System for Cataloging and Ordering Textiles
BDU	Battle Dress Uniform
CAR	Clemson Apparel Research
CIIP	Clothing Initial Issue Point
DODAAC	Department of Defense Activity Address Code
DSCP	Defense Supply Center Philadelphia
EOF	Electronic Order Form
FTP	File Transfer Protocol
GIS	Gerber Information Systems
JPEG	Joint Photographics Experts Group (file format)
JROTC	Junior Reserve Officer Training Corps
MCSS	Military Clothing Sales Store
PDM	Product Data Management
ROTC	Reserve Officer Training Corps
URL	Uniform Resource Locator

APPENDIX

EOF Sample Welcome Page
EOF Sample Registration Page
EOF Sample Ordering Officer Page
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Clothing

Welcome to the Ascot Special Measurement Garments Order Page

Electronic Order Form

(EOF)

Textiles

C&T Home Page
ASCOT
(Online Catalog)
Electronic Commerce
ClothesLine
Base Camp
Law Enforcement
Support Page
Chaplains' Corner
Contracting
About C&T
Complaint Department
Phone Directory
Who's Who
POCs for Bag &
Non-Bag Pricing
21st Century Logistics
Joint Reserve Force

To place a special measurement order, click here!

The usage of this system requires a **one-day waiting period** from the time of ASCOT registration email notification.

EOF Special Measurement requisitions are billed **MILSBILLS**.
EOF does NOT accept Government IMPAC credit cards.

View the EOF Frequently Asked Questions (FAQ) Page.

Contact Information

Ordering Assistance	Technical Assistance
Angela Anderson DSN Phone: 444-8536 Commercial Phone: 215-737-8536 Email: paa4007@dscp.dla.mil	Jill Forrester Clemson Apparel Research Phone: 864-646-8454 Email: cuneaz@clemson.edu

Please provide the following information when contacting EOF Technical Support.

1. The DODAAC used to register with EOF.
2. The step in the order process where you first noticed the problem.
3. Any specific information about the circumstances associated with your problem.

Please provide notification of the problem as soon as possible. A delay in reporting the problem may result in loss of the order information required to determine the cause of the problem.

Home Page | Ascot | Requisition Status | Ascot Registration | Ascot FAQ

Last updated Mon Feb 01, 1999 01:21:22 PM

Home Page | Ascot | Requisition Status | Ascot Registration | Ascot FAQ

EOF Registration

Please enter your DODAAC and password:

DODAAC: [＿＿＿＿＿＿]   Password: [＿＿＿＿＿＿]

[Continue]   [Reset Values]

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Order Information

Ordering Officer

DODAAC:	Date:

I certify that the person(s) identified herein cannot be properly fitted from stock sizes.

Name: [_____]	Service: [Air Force ▼]
Grade/Rank: [_____]	Point of Contact: [_____]
PoC Commercial Phone: [_____]	PoC DSN Phone: [_____]

Email Address: [_____]

Other Information

Demand Code: [___]	Signal Code: [___]	Fund Code: [___]
Distribution Code: [___]	Project Code: [___]	Priority Code: [___]
Media/Status Code: [___]	Advice Code: [___]	Supplementary Address: [___]

[Continue]   [Reset Values]

SM Order Questions: Angela Anderson
Technical Questions: System Administrator

Garment Recipient

Name: [_____]	SSN: [_____]
Service: [Air Force ▼]	Sex: ○ Female ○ Male
Grade/Rank: [_____]	Installation: [_____]
Age: [____]	Required delivery date (or recruit graduation date if applicable): [____▼] [____▼] [____▼]

[Continue]   [Reset Values]

SM Order Questions: <u>Angela Anderson</u>
Technical Questions: <u>System Administrator</u>

Garment Selection for John Doe

To order items not found in this garment list, please contact the following DSCP representative.

Angela Anderson
DSN Phone: 444-8536
Commercial Phone: 215-737-8536
Email: paa4007@dscp.dla.mil

Air Force-Male Garments

Description	Unit	Quantity (Hundreds-Tens-Units)			Requisition Number DODAAC-Julian Date-Serial Number
Coat, BDU, EHW	EA	0	0	0	GUEST2 - 9146 -
Coat, BDU, Temperate	EA	0	0	0	GUEST2 - 9146 -
Coat, BDU, Field	EA	0	0	0	GUEST2 - 9146 -
Coat, Men's, Service, Wool/polyester, Serge, 10 oz., Blue, AF Shade 1620	EA	0	0	0	GUEST2 - 9146 -
Shirt, Men's, Cotton/polyester, Long Sleeve, with Epaulets	EA	0	0	0	GUEST2 - 9146 -
Coat, Men's, All-weather with Removable Liner	EA	0	0	0	GUEST2 - 9146 -
Shirt, Men's, Cotton/polyester, Short Sleeve	EA	0	0	0	GUEST2 - 9146 -
Trousers, BDU, EHW	EA	0	0	0	GUEST2 - 9146 -
Trousers, Men's, Wool/polyester, Serge, 10 oz., AF Shade 1620	EA	0	0	0	GUEST2 - 9146 -
Trousers, BDU, Temperate	EA	0	0	0	GUEST2 - 9146 -

Continue   Reset Values

SM Order Questions: _Angela Anderson_
Technical Questions: _System Administrator_

EOF Form Selection

You are eligible to use either the **SHORT** or **LONG** form.

Please select one.

| Short Form | | Long Form |

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Technical Questions: <u>System Administrator</u>

Measurements for Private John Doe

Measurements

Description	Value	Status
Height	☐ + .00 (0/4) ▼ inches	Enter value ▼
Weight	☐ pounds	Enter value ▼
Across Shoulders	☐ + .00 (0/4) ▼ inches	Enter value ▼
Shoulder Circumference	☐ + .00 (0/4) ▼ inches	Enter value ▼
Chest	☐ + .00 (0/4) ▼ inches	Enter value ▼
Right Sleeve Length	☐ + .00 (0/4) ▼ inches	Enter value ▼
Left Sleeve Length	☐ + .00 (0/4) ▼ inches	Enter value ▼
Biceps	☐ + .00 (0/4) ▼ inches	Enter value ▼
Back Coat Length	☐ + .00 (0/4) ▼ inches	Enter value ▼

Comments

Description	Value
Subgarments Worn	
Other Comments	

Continue

Reset Values

SM Order Questions: <u>*Angela Anderson*</u>
Technical Questions: <u>*System Administrator*</u>

Taking Measurements for
Air Force-Male Garments

Measurements are to be snug. Tape measure is to be tight around the body and body parts, but not binding, constricting, nor deforming.

The individual should stand erect, yet relaxed, with eyes looking forward, weight evenly distributed on both feet, and arms straight at sides for all measurements, unless otherwise indicated.

Measure the Individual:
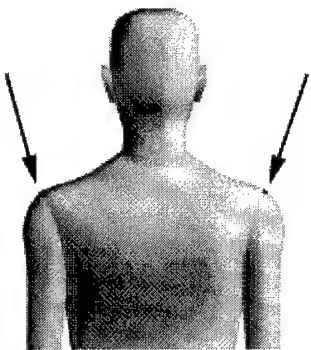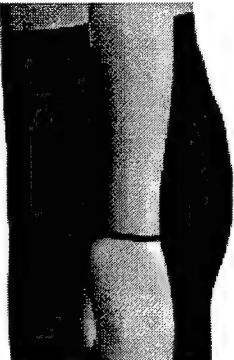
- with appropriate subgarments on as designated by service branch.
- without shoes.

Tools Required for Taking Measurements

- Standard vinyl tape measures and/or narrow steel tape.
- Standard height measuring device or wall chart.
- Scale for weight.
- Adhesive dots, tape, or marker to mark measuring points on the body.
- Narrow rubber band to fit around the wrist.

Preparing to Take Measurements

Item	Illustration	Description
Center Back at Neck Base		Have the individual put his head down. With the head facing forward locate the prominent bony bump at the base of the neck, midway between the shoulders at the top of the spine. Hold your finger on this bone and have the individual put his head back up. With head facing forward, mark this bone with dot, tape or marker. Leave the mark in place for the measuring process. View a slide show (43K) or video (1.39M) for this procedure.

Shoulder Points		Locate one prominent bony shoulder tip, where the arm joins the body. Mark the top of the shoulder at the outermost edge of the bone with dots, tape or marker. Repeat for the other shoulder. Leave the marks in place for the measuring process. View a <u>slide show</u> (70K) or <u>video</u> (1.12M) for this procedure.
Wrist		Place a rubber band on the wrist of the individual just below the prominent wrist bone. Leave the rubber band in place for the measuring process. View a <u>slide show</u> (40K) or <u>video</u> (0.79M) for this procedure.

SM Order Questions: <u>Angela Anderson</u>
Technical Questions: <u>System Administrator</u>

Measurements for Private John Doe

Height

Have the individual stand erect with heels together, eyes looking forward, and weight evenly distributed on both feet.

Using a standard height measuring device, a wall chart, or a ruler and marker, measure from the top of the head to the floor.

Record the measurement to the nearest quarter (0.25) inch.

View a slide show (53K) or video (1.28M) on taking this measurement.

Value: [   ] + | .00 (0/4)
.25 (1/4)
.50 (1/2)
.75 (3/4) | inches;   Status: | Enter value ▾ |

[Continue]   [Reset Values]   [Measurement Preparation]

SM Order Questions: Angela Anderson
Technical Questions: System Administrator

Measurements for Private John Doe

The value entry is not a valid number. Please correct the entry and click on CONTINUE.

Height

Have the individual stand erect with heels together, eyes looking forward, and weight evenly distributed on both feet.

Using a standard height measuring device, a wall chart, or a ruler and marker, measure from the top of the head to the floor.

Record the measurement to the nearest quarter (0.25) inch.

View a slide show (53K) or video (1.28M) on taking this measurement.

Value: [   ] + | .00 (0/4)
.25 (1/4)
.50 (1/2)
.75 (3/4) | inches;   Status: | Enter value ▼ |

| Continue | | Reset Values | | Measurement Preparation |

SM Order Questions: Angela Anderson
Technical Questions: System Administrator

Measurements for Private John Doe

The value entered is outside the usual range of values for this measurement. Please check the value and either correct the entry or set the measurement status to "Value out of range".

Height

Have the individual stand erect with heels together, eyes looking forward, and weight evenly distributed on both feet.

Using a standard height measuring device, a wall chart, or a ruler and marker, measure from the top of the head to the floor.

Record the measurement to the nearest quarter (0.25) inch.

View a slide show (53K) or video (1.28M) on taking this measurement.

Value: [   ] +
.00 (0/4)
.25 (1/4)
.50 (1/2)
.75 (3/4) inches;   Status: [Enter value   ▼]

[Continue]   [Reset Values]   [Measurement Preparation]

SM Order Questions: Angela Anderson
Technical Questions: System Administrator

Measurements for Private John Doe

No value has been entered for this measurement. Failure to supply all measurements could preclude garment production or result in an ill-fitting garment. Either enter a value or set the measurement status to "Missing value".

Height

Have the individual stand erect with heels together, eyes looking forward, and weight evenly distributed on both feet.

Using a standard height measuring device, a wall chart, or a ruler and marker, measure from the top of the head to the floor.

Record the measurement to the nearest quarter (0.25) inch.

View a slide show (53K) or video (1.28M) on taking this measurement.

.00 (0/4)	
.25 (1/4)	
.50 (1/2)	
.75 (3/4)	

Value: [   ] + [.75 (3/4) ▼] inches;   Status: [Enter value ▼]

[Continue]   [Reset Values]   [Measurement Preparation]

SM Order Questions: Angela Anderson
Technical Questions: System Administrator

Measurements for Private John Doe

Only whole numbers should be used in the value entry field. Please check the value shown and correct if necessary before clicking on CONTINUE.

Height

Have the individual stand erect with heels together, eyes looking forward, and weight evenly distributed on both feet.

Using a standard height measuring device, a wall chart, or a ruler and marker, measure from the top of the head to the floor.

Record the measurement to the nearest quarter (0.25) inch.

View a slide show (53K) or video (1.28M) on taking this measurement.

Value: [   ] + .00 (0/4) ▲
                      .25 (1/4)
                      .50 (1/2)
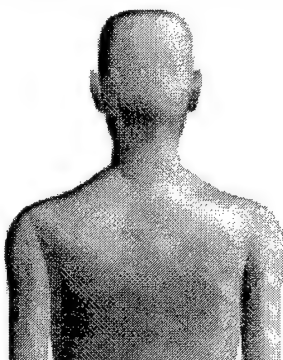   .75 (3/4) ▼ inches;   Status: [Enter value ▼]

[Continue]   [Reset Values]   [Measurement Preparation]

SM Order Questions: Angela Anderson
Technical Questions: System Administrator
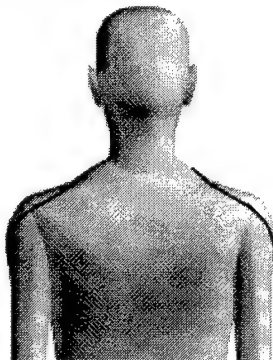
Profiles for Private John Doe

Shoulder Profile

Have the individual stand in a normal and relaxed position with legs together and arms to the side. Look at the individual from the back.

◉ Normal Shoulders	○ Sloping Shoulders	○ Square Shoulders
If the shoulders are normal, select this button.	If the shoulders are sloping, select this button.	If the shoulders are square, select this button.

Continue   Reset Values

SM Order Questions: Angela Anderson
Technical Questions: System Administrator

Comments on EOF order for
Private John Doe

What subgarments were worn by Private John Doe when the measurements were taken?

Please enter any other information which may be useful in filling this order. For example:

- Is this order for a recruit and required for graduation?
- What are the closest fitting stock sizes?
- Any special items noted in the body profile information?

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Technical Questions: System Administrator

EOF Summary

DODAAC:	Date:

Ordering Officer

Name:	Service:
Grade:	Point of Contact:
PoC Commercial Phone:	PoC DSN Phone:
Email Address:	

Other Information

Demand Code:	Signal Code:	Fund Code:
Distribution Code:	Project Code:	Priority Code:
Media/Status Code:	Advice Code:	Supplementary Address:

Garment Recipient

Name:	SSN:	Service:
Sex:	Grade:	Age:
Installation:	Recruit Graduation Date:	

Garments

Description	Unit	Quantity	Requisition Number
Coat, BDU, EHW	EA	001	GUEST2-9146-0001

Measurements

Description	Value	Status
Height	72.25	Value OK
Weight	150	Value OK
Across Shoulders	17	Value OK
Shoulder Circumference	42	Value OK
Chest	42	Value OK
Right Sleeve Length	34	Value OK
Left Sleeve Length	34	Value OK
Biceps	13	Value OK
Back Coat Length	35	Value OK

Comments

Description	Comment
Subgarments worn for measurements	None
Other comments	None

SM Order Questions: Angela Anderson
Technical Questions: System Administrator

Special Measurement Electronic Order Form

The order for John Doe has been successfully processed and transmitted.

To confirm your order has been received by DSCP or to check the status of this order, please contact the following DSCP representative.

Angela Anderson
DSN Phone: 444-8536
Commercial Phone: 215-737-8536
Email: paa4007@dscp.dla.mil

Note: Please allow at least 24 hours before confirming order.

Place another order or terminate this session.

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SM Order Questions: Angela Anderson
Technical Questions: System Administrator

Special Measurement Electronic Order Form

Thank you for using the Special Measurement Electronic Order Form.

Please address comments or suggestions to the System Administrator.

SM Order Questions: <u>*Angela Anderson*</u>
Technical Questions: <u>*System Administrator*</u>